

times as thick, in certain cases even equal in thickness to the stem. They present the two layers which constitute the walls of the body, and contain a prolongation of its cavity. They are present only on a small number of hydranths, about one ninth of the whole. They are capable of movement, as, indeed, is indicated by the presence of a strongly-developed muscular layer, and are furnished with a great abundance of urticating organs, whence the name of *cnidophores* given to them by Dr. Weismann. These urticant capsules are more especially grouped at the extremity of the cnidophore, where they form several layers among the cells of the ectoderm. In the deeper layers of the endoderm there are subepithelial cells giving origin to circular muscular fibres which present nuclei, and upon which a striation is observed here and there.

The cnidophores only make their appearance in hydranths which have attained their full development. They show themselves first of all in the form of an elevation of the ectodermic wall, situated upon a small annular projection which occurs at the lower part of the calyx, and which Dr. Weismann calls the *urticant wall* (Nesselwall). This name has been given to it because it is the part of the calyx which contains the greatest quantity of urticating organs, at any rate in *Eudendrium ramosum*. Below this urticant wall there is an annular groove; and immediately beneath this groove is seen what Dr. Weismann calls the *glandular ring* (Drüsenring). At this point the ectoderm only presents a layer formed of cells which produce a viscous secretion.

If, on the one hand, it is evident that the cnidophores are powerful weapons for the hydroids which possess them, on the other it is difficult even for so sagacious a naturalist as Dr. Weismann to understand their special use, since they are the appanage of only a small proportion of the hydranths of a colony.

There are two points to be noted with regard to these singular organs—namely, that they do not occur in the other species of *Eudendrium*, and that they occupy a completely asymmetrical position. The author compares the cnidophores with certain structures met with in the Hydractinidæ, the Plumularidæ, the Milleporidæ, &c., and which one might be tempted to regard as their homologues. He shows that they differ from these completely from a morphological and histological point of view, and that we have to do here with organs of a special nature.—*Mittheil. aus der zool. Stat. zu Neapel*, vol. iii., 1881; *Bibl. Univ., Arch. des Sci.*, January 15, 1882, p. 103.

Note on the Pearly Organs of Scopelus.

By H. B. GUPPY, M.B., Surgeon R.N.

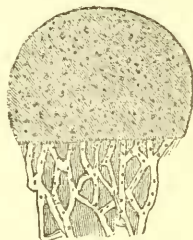
Dr. Günther* has called upon travellers to examine fresh specimens of pelagic fishes provided with "luminous organs," in order to ascertain, if possible, the functions of these organs, and also to discover whether or not the luminosity (if such be their function) is

* 'Introduction to the Study of Fishes,' p. 706.

subject to the will of the fish. I have recently had the opportunity of observing some fresh-caught *Scopeli*.

On the night of October 18, 1881, when near the Cape of Good Hope (in lat. $35^{\circ} 45'$ south, long. $12^{\circ} 30'$ east), the net brought in a small *Scopelus**, which was unfortunately dead. It could not have been in the net for more than a few minutes; but a very short delay in hauling in appears sufficient to kill these animals; and, in fact, in order to obtain them alive it would be necessary to examine the net every five minutes. The individual I caught was about two inches in length, and possessed the characteristic pearly bodies on the sides of the head and body; in addition, there were seven other considerably larger pearly organs arranged along the dorsal border of the body close to the caudal fin. No luminosity was exhibited by these organs; nor did irritation excite its display. I examined the larger of these bodies, those from the dorsal border, and found them to vary in diameter from $\frac{1}{300}$ to $\frac{1}{100}$ of an inch. Each consisted of a limiting membrane investing a dense mass of granular and nuclear matter, which was ejected with some degree of force when the membrane was ruptured.

The form of the organ is shown in the accompanying rough sketch: from its posterior or flattened surface springs a fine network of tubes or vessels freely anastomosing, and varying in size from $\frac{1}{2000}$ to $\frac{1}{1500}$ of an inch across. The same granular material filled these tubes; but it was somewhat diffuent, and in one of the organs I examined there was a decided flow of the contents of the tube for a short period, though it may have been due to the pressure of the covering-glass. I was not able to trace the mode of origin of these tubes with exactitude; and I should also observe that, under the microscope, muscular tissue was generally to be noticed amongst the substances adhering to the detached organ; but whether it had any particular relation to the pearly organ or was simply brought up with the deeper tissues, I was unable to determine.



Pearly organ from a *Scopelus* taken off the Cape of Good Hope.

Size of the tubes $\frac{1}{2000}$ to $\frac{1}{1500}$ inch; size of organ $\frac{1}{300}$ to $\frac{1}{100}$ inch.

On the night of November 7, 1881, in about the same locality (lat. $35^{\circ} 17'$ south, long. $17^{\circ} 43'$ east), two *Scopeli* were caught at night, one dead and the other gasping; both of them were of the same size as the former specimen I obtained; but they were destitute of the large dorsal pearly bodies which I have described. The dead one evinced no luminosity; nor did it exhibit any on irritation; but the one that had some life remaining displayed a faint though an undoubted luminosity in the pearly bodies of the pectoral region, which were larger than those which were situated on other

* This specimen appears to me to be the same as that depicted in the 'Study of Fishes' (*Scopelus boops*).

parts of the body; irritation failed to diminish, or increase, or even to excite the effect.

With reference to the moot point as to whether these bodies are accessory eyes or merely luminous organs, I may mention that one of the causes of the diffused phosphorescence of the sea I have observed to lie in the bright phosphorescence constantly emitted by the eyes of a small shrimp (about half an inch in length) which abounds in the South Atlantic; we have in this animal, therefore, an instance of a "luminous eye." I hope you will pardon this suggestion of mine; but I thought it right to insert it, in the event of there being any thing novel in it.

H.M.S. 'Lark,' Sydney,
December 1881.

On the Occurrence of Centrolophus pompilus on the East Coast of England. By DR. A. GÜNTHER.

I am indebted to Henry Laver, Esq., for a very fine example of the Black-fish (*Centrolophus pompilus*), which was caught on the 20th of November last by Captain Cranfield of Rowhedge, at the mouth of the Colne.

The majority of the British specimens of this fish have been obtained on the coast of Cornwall; and, so far as I am aware, this is the first instance known of the fish having wandered so far eastwards.

The oldest Artiodactyle. By E. D. COPE.

Members of this order have been found in the Upper Eocene of North America (*Achanodon*); but none have been determined as yet from the American Suessonian or Lower Eocene. A species represented by teeth from the Siderolitic beds of Switzerland has been referred to *Dichobune* (*D. campichii*, Piet.); but dental characters alone are not sufficient to distinguish that genus from the Perisso-dactyle Phenacodontidæ*. Dr. Lemoine found astragali of a small Artiodactyle in the Suessonian of Reims, which he has recently ascribed to his *Lophiochyrus Peroni*, which he believes (Proceedings French Assoc. Adv. Sci., Montpellier, 1880) to be a suilline. I have reported an astragalus from the Wind-River formation of Wyoming Territory, which is almost exactly similar to those found by Lemoine. A specimen of *Miocænus brachystomus*, Cope, now to be described, enables me to characterize with some degree of completeness this interesting form, which precedes in time all the known American Artiodactyla.

The characters of the tarsus are typically those of the order Artiodactyla. The astragalus exhibits a distal trochlea which is continuous with the sustentacular facet, and which articulates with both cuboid and navicular bones.

* See 'American Naturalist,' 1881, December.